CONTRIBUTIONS TO THE NATURAL HISTORY OF THE COMMANDER ISLANDS.

No. 6.—Report on Bering Island Mollusca collected by Mr. Nicholas Grebnitzki.

By W. H. DALL.

The interesting collection of shells obtained by Dr. Stejneger (these proceedings Vol. VII, 1884, pp. 340–349) has recently been supplemented by another made by Mr. Nicholas Grebnitzki, Russian governor of the Commander Islands, which has been sent to the U. S. National Museum with the understanding that it was to be reported upon. Though small, it contains several additions to the first list, some of which are of much interest, and the enumeration of these gives me an opportunity of incorporating some remarks and additional notes on the species collected by Dr. Stejneger.

Beside the species collected at Bering Island, Mr. Grebnitzki had the kindness to include the following species from Petropavlovsk, Kamchatka, dredged in Avatcha Bay: *Acanthodoris pilosa* (O. F. Müll.) Bergh, white and purplish varieties; *Lacuna vincta* Montagu; *Litorina grandis* Middendorff, young specimens; *Margarita obscura* Couthouy; *Margarita olivacea* Brown and var. *gigantea* Leche; *Trophon multicostatus* Eschscholtz; and a *Bela*, closely allied to or identical with *B. turricula*.

In order to make the paper more useful I have added the species referred to Bering Island by Dr. Leche and Mr. C. Aurivillius, in their publications on the marine acephala and gastropoda of the Vega Expedition and included in the final list all those collected by Stejneger so as to make as nearly as possible a complete list of the known marine mollusk fauna of Bering Island. This adds about eighty per cent. of species to the original list. I am under the impression that the enumeration of the land and fresh-water species in the Stejneger report was sufficiently accurate for all purposes to which it is likely to be applied, though Dr. Westerlund is unable to accept one of my determinations. It is possible that I may have been in error as to the identity of *H. floccula* Mor. with the immature *H. pauper* Gld., which should probably be referred to *H. ruderata* Studer.

List of species.

Lestoteuthis fabricii (Licht.) Verrill?

L. fabricii Verrill, N. Am. Ceph., 390, 1881.

?Onychoteuthis kamtschatica Midd., Mal. Ross, II, p. 186, pl. XII, figs. 1–6, 1849.

Young specimens according pretty well with the description of Middendorf, but to a cursory examination not showing traces of the large hooks on the clavulæ of the tentacular arms, were obtained by Greb-

nitzki on Bering Island. Specimens have been submitted to Professor Verrill who has made a special study of this group and will probably be reported upon by him at a later period.

Cylichna propinqua M. Sars.

C. propinqua Dall, Point Barrow shells, p. 526, 1884.
C. reinhardti Möller, Ind. Moll. Grönl., p. 6, 1842 (*proparte*).

Found in seventy-five fathoms water near Bering Island, by the Vega Expedition (Aurivillius).

Æolidia papillosa (L.) Bergh.

Bering Island, Grebnitzki.

Cadlina pacifica Bergh.

C. pacifica Bergh, Sci. Res. Expl. of Alaska, 176, pl. VII, figs. 19–20; pl. VIII, figs. 7–18, May, 1879.

Bering Island, Grebnitzki. Unalashka and Shumagin Islands, Dall.

Acanthodoris pilosa (O. F. Müll.) Bergh.

A. pilosa Bergh, l. c., p. 240, pl. X, figs. 12–15; pl. XI, figs. 1–2; pl. XII; pl. XIII, figs. 2–5, Jan., 1880.

Bering Island, Grebnitzki.

Siphonaria thersites Carpenter.

S. thersites Cpr., 1864. Aurivillius, Vega Exp., IV, p. 374, pl. XII, figs. 19–20; pl. XIII, fig. 16, 1885.

Shores of Bering Island, Vega Expedition; thence to Puget Sound via the Aleutians and shores of the mainland, Dall.

Tonicella submarmorea Middendorff.

Chiton submarmoreus Midd., Bull. Petersb. Acad. Sci., IV, No. 8, 1846.
Chiton insignis Reeve, Conch. Icon. *Chiton*, fig. 148.
Tonicella submarmorea Dall, Sci. Res. Expl. of Alaska, p. 109, pl. I, fig. 7, 1878

Bering Island, Grebnitzki. Japan, Okhotsk Sea, Aleutians, Alaska, to Washington Territory; Middendorff and Dall, l. c.

Trachydermon ruber (L.) Carpenter.

T. ruber Dall, l. c., p. 102, pl. I, fig. 3, 1878.

Bering Island, Grebnitzki. Northern seas generally.

Placiphorella stimpsoni Gould.

Chiton (*Molpalia*) *stimpsoni* Gld., Proc. B. S. Nat. Hist., VII, p. 161, 1859; Otia, p. 118, 1862.

Bering Island, Grebnitzki, five specimens; Hakodadi Bay, Stimpson. California (*P. velata* Cpr.)?; Chile, Lobos Islands (*P. Blainvillii* Brod.)?

This species, which is identified from Gould's type, is especially interesting. It would seem as if its real home was in the Commander and Aleutian Islands. In 1874 I dredged a single middle valve of large size in twenty fathoms gravel at the Semidi Islands. This and the Bering Island specimens are finely grown.

The *P. velata* Cpr., type of the section, is found at Monterey, California. The *P. Blainvillii* Brod. (1832) is reported from the inner Lobos

Island off the Chilian coast. The *P. imporcata* and *sinuata* of Carpenter (1865) appear to differ from the others in the fine, close granular scales covering the girdle, and should form a section by themselves, characterized by that character, by the narrower and higher valves and less patulous anterior extension of the girdle, apparently from the dried specimens not papillose below; as well as a pronounced sculpture, absent from all of the *velata* type. The latter have broader, flatter valves, an enormous anterior extension of the girdle, studded with papillæ below and long tubular mail-clad but flexible spines above, and a series of the latter one opposite each end of each suturè in a distinct pore. The girdle, except for these spines, is naked, and on the valves, except for rude ridges of growth and obsolete sutural ridges, there is no pronounced sculpture. For the group typified by *P. Blainvillii* the name *Placiphorella* must be retained, for the *P. sinuata* group I would propose the name *Osteochiton*. As to the species of the *Placiphorella* group, when the two incongruous forms are eliminated, we have the *P. Blainvillii*, which differs from the northern forms, according to Dr. Carpenter, by a fewer number of slits in the anterior valve, the *P. stimpsoni* of Gould, above mentioned, and the *P. velata* of Carpenter. These two are very similar and may require consolidation when a sufficient series of both can be obtained for comparison.

Leptochiton cancellatus Sowerby.

Chiton cancellatus Sby., Conch. Ill., f. 104–5, 1839.

Bering Island, Grebnitzki. Alaska, not north of the Aleutians, Dall; British seas, Norway, &c.

Acmæa testudinalis patina (Eschscholtz) Dall.

A. testudinalis (L.), var. *patina* Dall, Sci. Res. Expl. Alaska, p. 122, Dec., 1878.

Bering Island, Grebnitzki; and Vega Expedition, Aurivillius.

These specimens are nearer the typical *patina* than to the typical *testudinalis*.

Acmæa pelta Eschscholtz.

Bering Island, Grebnitzki.

Velutina cryptospira Middendorff.

Bering Island, Grebnitzki.

Litorina sitkana Philippi.

L. tenebrosa Mont., var. *costulata* (Midd.), Aurivillius, Vega Expl., IV, 325, pl. 12, fig. 6, 1885.

Bering Island, Vega Expedition.

Litorina sitkana, var. **atkana**, Dall.

L. tenebrosa Mont., var. *obtusatæa* (Midd.), Aurivillius, Vega Exp., l. c., p. 325, pl. 12, figs. 4, 5, 1885.

Bering Island, Aurivillius.

This fine, large form, which, from its colossal size at Atka Island and Kyska, I have distributed for ten years under the name above given, is, to my mind, closely related to *sitkana*, from which it differs in its larger size, smooth surface, and tendency to spiral bands of white and dark-brown. Until the whole group can be carefully studied and dissected, it would be foolish to be dogmatic in opinion about them, but I have not been able from a study of about a bushel of the shells merely, to indentify this form with *tenebrosa*, or find any special likeness in it to *obtusata*.

LACUNA.

Lacuna vincta Montagu.

Bering Island, Grebnitzki.

Subgenus HALOCONCHA.

Lacunella Dall, Proc. U. S. Nat. Mus., VII, p. 344, 1884. Not of Deshayes.
Lacunaria Dall, in errata, l. c., p. viii. Not of Conrad.

The writer having examined the last nomenclator and finding no mention of *Lacunella*, and totally forgetting Deshayes's use of the name, was careless enough to look no further, and his erratum, prepared at the last moment and without time for an exhaustive search, was as unfortunate as his first venture. The present name is substituted with some apprehension, but not until after a careful and thorough search.

Natica clausa Broderip and Sowerby.

Bering Island, Vega Expedition.

Aurivillius makes this = *N. grönlandica* (Beck) Möller, though he gives Möller's species subsequently, and speaks of it as having a horny operculum. The first mention probably should be *septentrionalis* (Beck) Möller, which is identical with *clausa*, but applied thirteen years later.

Turritella (Tachyrhynchus) erosa Couthouy.

T. erosa (Couthouy) Aurivillius, l. c., p. 322, pl. 12, fig. 7; pl. 13, fig. 17.
T. polaris Beck, Möller. Index, Moll. Grönl., 1842.

Bering Island, dredged in 65 fathoms, Vega Expedition.

This species, common to the Arctic seas, is very much larger in the Arctic Ocean than in the Aleutians or on the New England coast.

Cerithiopsis stejnegeri Dall.

Bering Island, one fine specimen, Grebnitzki.

Tritonium oregonense Redfield.

Triton oregonense Redfield, Ann. Lyc. Nat. Hist. N. Y., IV, p. 165, pl. XI, figs. 2*a*, 2*b* (immature), 1846 (Str. of Fuca). Gould, Expl. Exp., Shells, p. 241, 1852.
Fusus oregonensis "Say" Reeve. Conch. Icon., IV, Mon. *Fusus*, figs. 61*a–b*, 1848 (North America).
Tritonium cancellatum Midd., Mal. Ros., II, 165, pl. III, figs. 1–4, 1849. Not of Lamarck.

Tritonium (Lagena) oregonense H. & A. Ad., Gen. Rec. Moll., I, p. 104, 1858.
Priene oregonensis A. Ad., Journ. Lin. Soc., VII, 106, 1864. Cpr., Rep. Br. As., 1863, pp. 597, 661, &c.
Tritonium cancellatum Schrenck, Amurl. Moll., p, 431, 1867. Not of Lamarck (Hakodadi Bay).
Tritonium oregonense Lischke, Jap. Meer. Conch., II, p. 166, 1871; III, p. 31, 1874. Dunker, Ind. Moll. Jap., p. 30, 1882.
Priene cancellata Tryon (pars), Man., III, pp. 33, 34, pl. XVI, figs. 165–167, 1880.
Tritonium cancellatum Aurivillius, Vega Exp., Vet. Arb., IV, p. 346, pl. XIII, fig. 8 (dentition), 1885.

Monterey, California, northward to the Aleutians, Dall; Bering Island, 5–10 fms. hard bottom, Vega Expedition, one specimen; Kamchatka, Dall; Kurile Islands; Okhotsk Sea and Japan, Middendorff, Schrenck, Dunker and Stimpson.

With but one specimen of this shell it was not remarkable that Mr. Aurivillius should fall into line with several older naturalists who have asserted the identity of the Alaskan shell with that from Patagonia, although Reeve, Gould, Arthur Adams, Carpenter, Lischke, Dunker, and its describer have pointed out the distinctions between them in various publications. But from the first there has been an amount of blundering in regard to the habitat of the few shells related to this species which seems surprising.*

Chemnitz correctly figured and described the Patagonian shell from his own cabinet and assigned it a proper habitat. Were he consistently as binomial throughout as he is in this instance his specific name should stand. Lamarck followed, and the first to blunder was Reeve, who figured the southern shell and assigned it an Alaskan habitat while figuring the real but immature Alaskan shell on the same plate and merely assigning it to "North America." This led others into error. Carpenter, in his first (but not his second) report to the British Association, assigns both *cancellatum* and *scaber* (King) to the Arctic, an error which he realized later. Tryon, in his latest manual, has followed this account, and, although referring to Gould's figures of the Patagonian living animal taken on the spot by Couthouy, queries its southern distribution. It would seem, since he gives no figure of the adult *oregonense*, that his material was insufficient to come to a decision upon.

One reason why so much confusion has prevailed is perhaps that the *oregonense*, while a very common shell from Monterey, Cal., to the Aleuti-

* To make the matter clearer the synonymy of the Patagonian species is appended:

Tritonium cancellatum Lamarck.

Murex magellanicus Chemnitz, Conchyl. Cab., X, p. 275, tab. 164, fig. 1570, 1788 (Magellan Strait).
Triton cancellatum Lamarck, An. S. Vert., ed. 1, VII, p. 187, 1822; ed. 2, Deshayes, IX, p. 638, 1843 (S. America).
Fusus cancellatus Reeve, Conch. Icon., IV, Mon. *Fusus*, fig. 62 (only), 1848 (Unalashka, Kamchatka)!
Priene cancellatus A. Adams, Journ. Lin. Soc., VII, p. 106, 1864 (Patagonia).
Priene cancellata Tryon (pars), Man., III, p. 34, pl. 16, fig. 164 (only).

ans, is almost always broken, defaced, truncated, and unpleasing by the time the waves have cast it on the beach. The shell is so thin and the epidermis so strong that the young shells in drying always break; I have seen many hundreds but never one adult with the apex complete. The epidermis is also much more fugitive than in the southern form and rarely covers the shell, or, when it does, it comes off as soon as the shell is dried for the cabinet. The fry has a pretty horn-colored shell, with revolving keels like a *Torellia;* the young animal much resembles a pteropod, has two ciliated, wing like, lateral flaps with whiclr it progresses and is brilliantly colored with metallic grass-green. I have taken it in the tow-net far from land, which may account for its wide distribution. The adult animal is pinkish flesh-color more or less mottled with slaty or purple streaks in great variety; the foot is short for the size of the animal, the nucleus of the concentric operculum is not terminal but just within the margin on one side of the longer axis of it, as in some (but not most) buccinums.

The adult shell is more turreted, has deeper channels and coarser sculpture than the *cancellatum;* the epidermis is longer, thicker, and coarser; the transverse riblets in the young are 12–13 to the whorl, in the adult, 19–21; in *cancellatum* the adult has 34–38 of them and they extend more distinctly over the periphery; in *oregonense* the sutures are deeper, there is a flattened space on the whorl just in front of them, the whorls do not increase in such rapid proportion, and the mouth of the shell is shorter in proportion to the whole length than in *cancellatum.* The varices in the latter are less numerous, less constant, and less raised above the ordinary riblets than in *oregonense.* I have probably examined in the field more specimens of *oregonense* than all other naturalists put together have ever seen. In the National Museum is a good series of it and of the true *cancellatum* from Patagonia, the latter brought back by the Wilkes exploring expedition. With this material I have no hesitation in declaring, in common with Gould, Carpenter, A. Adams, Lischke, and Dunker, the distinctness of the two species. It should also be remembered that the most adjacent extremes of their distribution are separated by some thousands of miles. I have no confidence in any reported occurrence of *cancellatum* in Japan, the statement being doubtless due to an erroneous identification, or an error in labelling. Peru is the furthest north that I have heard claimed for *cancellatum*, and this with much doubt; *oregonense* is not known south of San Diego, Cal., if it even reaches so far, as it has never yet been reported south of Santa Barbara.

Trichotropis insignis Middendorff.

Bering Island, Grebnitzki.

This species is extremely variable in form and sculpture. *T. solida* Aurivillius presents some resemblance to certain of these varieties, with which it should be compared, though their identity cannot be assumed.

Margarita helicina Fabricius.

Bering Island, Grebnitzki.

Margarita varicosa Mighels.

Bering Island, one specimen dredged at 65 fathoms by the Vega Expedition.

Margarita vorticifera Dall.

Bering Island, Grebnitzki.

Purpura lima Martyn.

P. Freycinetii Deshayes, 1839, Aurivillius, l. c., p. 334, pl. 12, figs. 1, 2, 1885.

Bering Island, collected by the Vega Expedition.

This species differs from *P. lapillus* of all varieties in never having a toothed aperture. The real analogue of *P. lapillus* on the northwest coast, paradoxical as the statement may at first appear, is *P. crispata* and not *P. lima*.

Strombella callorhina Dall, var. stejnegeri Dall.

Bering Island, Grebnitzki; dredged in 5–10 fathoms at Bering Island by the Vega Expedition.

The specimens sent by Mr. Grebnitzki were rude and worn, though living; from most of them the delicate striation was nearly all worn away, and the strength and sharpness of the transverse ribbing was very variable.

Chrysodomus (Tritonofusus) kroyeri Möller.

Fusus arcticus Philippi.
Fusus cretaceus Reeve (when dead and chalky).

Bering Island, 75 fathoms, dredged by the Vega Expedition.

Chrysodomus spitzbergensis Reeve.

Fusus terebralis Gould.
Sipho lividus Mörch.

Bering Island, Grebnitzki, one very young specimen. An adult was collected by Stejneger.

Columbella (Astyris) rosacea Gould.

Bering Island, Grebnitzki.

Volutharpa ampullacea Middendorff.

Bering Island, Grebnitzki. Several specimens had no operculum and only traces of the opercular gland.

Buccinum tenue (Gray) Stimpson.

Bering Island, dredged in 65 fathoms by the Vega Expedition. The var. *elatior* Midd. was obtained in 75 fathoms.

Buccinum cyaneum Brugiére, var. **mörchianum** Fischer.

Bering Island, Grebnitzki; Vega Expedition, dredged in five to ten fathoms on hard stony bottom.

Buccinum percrassum Dall.

Cf. Kobelt, Mon. Buc., Mart. und Chemn. neueste Ausg.

Two specimens of this form, whose nearest relative is *B. polare* (though at first sight it looks much more like *B. cyaneum*) were discovered among some *B. cyaneum*, var. *mörchianum*, collected by Stejneger, too late to insert in my preceding paper on Bering Island mollusks. The soft parts had not been observed before. The shell is thick, like the Arctic form figured by Dr. Kobelt from photographs of my type, but smaller and much darker colored. The operculum is disproportionately large for a *Buccinum*, nearly filling the aperture, and making a striking contrast with that of *B. mörchianum*, which is always minute and much of the time absent entirely.

Pleurotoma beringi Aurivillius.

P. beringi Aurivillius, Vega Exp., l. c., p. 354, t. 13, fig. 3, 1885.

Bering Island, Vega Expedition, dredged in 75 fathoms, sand, one specimen; several others were obtained between that and St. Lawrence Island in 55 fathoms, sand. This is a very interesting and characteristic species somewhat resembling a dextral *P. vinosa*.

Bela violacea Mighels and Adams.

Pleurotoma violacea Migh. & Ad., Bost. Soc. Nat. Hist. Proc. I, p. 50, 1841. Bost Journ. Nat. Hist., IV, p. 51, pl. IV, fig. 21, 1842. Verrill, Conn. Acad. Trans., V, 482, 1882. Not of Aurivillius, l. c., p. 348, 1885.

Bering Island, Grebnitski.

Prof. Verrill regards this form as a variety of the previously described *Pleurotoma bicarinata* Couthouy (1839). It has many other synonyms, but I cannot agree that it is nearly related to *simplex* Midd., *arctica* A. Adams, *gigas* Verkruzen, etc., as supposed by Mr. Aurivillius. It may be, however, that he is not acquainted with the genuine *violacea* and so has been misled by specimens incorrectly labelled.

Saxicava rugosa Linné.

S. pholadis Leche, Vega Exp., l. c., III, p. 440, 1883.

Shores of Bering Island, Vega Expedition.

Cuspidaria (Cardiomya) pectinata Cpr., var **beringensis** Leche.

Neæra behringensis Leche, l. c., p. 438, pl. 32, figs. 1, 2, 1883.

Bering Island, dredged on a sandy bottom at the depth of 65 fathoms by the Vega Expedition. Port Etches, 15 fathoms mud, and elsewhere in Alaska in about the same latitude, Dall.

Tapes staminea Conrad.

Venerupis petitii Deshayes, Midd. and Leche, l. c., p. 440, 1883.
Tapes diversus Sowerby fide Dunker.

Shore at Bering Island, Vega Expedition.

Modiolaria lævigata Gray?

M. laevis Beck, Leche, l. c., p. 450, pl. 34, figs. 29, 30, 1883.

Shore at Bering Island, Vega Expedition.

The two forms figured by Leche as *lævigata* and *lævis* certainly exist; but the differences between them are such as ordinarily characterize the sexes in diœcious acephala, and I have always so referred them. Further investigation may be needed to settle this.

Pecten (Propeamusium) alaskensis Dall?

Pecten Hoskynsi Forbes, var. *major* Leche, l. c., p. 452, 1883.

Near Bering Island in 75 fathoms, Vega Expedition.

In a study of the deep-sea pectens of this group, in connection with the Pectinidæ of the Blake dredgings, I have determined that the genuine *Pecten hoskynsi* is not an Arctic species; the shells called *Hoskynsi* by Jeffreys and others from Arctic Norway, &c., are *P. pustulosus* Verrill, which has no internal ribs; from Alaskan waters and the adjacent Arctic seas the only pecten yet found belonging to this group is the *P. alaskensis* Dall (1871), which has many more internal ribs than the Atlantic forms and was pronounced distinct by Jeffreys. It is probable that this is what Dr. Leche refers to, because it is not rare in the region and might be expected to occur there. Still in the absence of figures or specimens I do not feel like expressing a dogmatic opinion in regard to it.

Placunanomia macroschisma Deshayes.

Bering Island, Grebnitzki.

This completes the list of additions and the following table will sum up the total mollusk-fauna, giving at one glance the known species, the collectors, and something of the range of the forms referred to:

FAUNAL SUMMARY.

Species of Commander Islands.	Collected by—			Range.				
	Stejneger.	Grebnitzki.	Vega Exp.	Japan.	Kamchatka.	Arctic.	Aleutians.	California.
Gonatus amœnus	×					×	×	
Lestoteuthis fabricii (?)		×		×	×			
Cylichna propinqua			×			×	×	
Æolidia papillosa	×	×					×	
Cadlina pacifica		×					×	
Acanthodoris pilosa		×				×	×	
Limax (Agriolimax) hyperboreus	×		×		×	×	×	
Vitrina exilis	×		×	×	×	×	×	×
Hyalina radiatula	×				×	×	×	
Conulus fulvus var	×		×	×	×	×	×	
Patula ruderata var. pauper	×		×	×	×			
Pupilla decora and arctica	×		×		×	×	×	
Limnæa ovata	×		×		×		×	
Limnæa humilis	×				(?)			
Siphonaria thersites			×				×	
Trachyradsia aleutica	×						×	
Tonicella marmorea	×			×	×	×	×	×
Tonicella submarmorea		×		×	×	×	×	
Trachydermon ruber		×		×	×	×	×	
Schizoplax brandtii	×				×		×	
Leptochiton cancellatus		×						
Placiphorella stimpsoni		×		×				(?)
Cryptochiton stelleri	×			×	×	×	×	×
Acmæa testudinalis patina		×			×	×	×	×
Acmæa pelta	×						×	×

FAUNAL SUMMARY—Continued.

Species of Commander Islands.	Collected by—			Range.				
	Stejneger.	Grebnitzki.	Vega Exp.	Japan.	Kamchatka.	Arctic	Aleutians.	California.
Velutina cryptospira		×			×		×	
Piliscus commodus	×					×	×	
Crepidula grandis	×			×	×	×	×	
Litorina sitkana	×			×	×		×	×
Litorina var. subtenebrosa			×	×	×	×	×	
Litorina var. atkana			×				×	
Lacuna vincta	×	×		×	×	×	×	×
Haliotis reflexa	×						×	
Natica clausa			×	×	×	×	×	
Natica russa	×				×		×	
Tachyrhynchus erosa			×	×	×	×	×	
Trichotropis insignis	×	×			×		×	
Tritonium oregonense			×	×	×		×	×
Cerithiopsis stejnegeri	×	×					×	
Margarita helicina	×	×		×	×	×	×	
Margarita vorticifera		×			×	×	×	
Margarita varicosa			×		×	×	×	
Purpura lima			×	×	×	×	×	×
Trophon truncatus	×					×	×	
Strombella var. stejnegeri	×	×	×			×		
Tritonofusus Kroyeri			×			×	×	
Chrysodomus liratus	×				×	×	×	
Chrysodomus spitzbergensis	×	×			×	×	×	
Volutharpa ampullacea		×		×	×	×	×	
Astyris rosacea		×			×	×	×	
Buccinum tenue			×			×	×	
Buccinum var. mörchianum	×	×	×		×		×	
Buccinum percrassum	×					×		
Pleurotoma (Bela) violacea		×				×	×	
Pleurotoma beringi			×				(?)	
Pholas crispata	×			×				×
Pholadidea penita	×			×				×
Saxicava rugosa	×		×	×	×	×	×	×
Mya truncata	×				×	×	×	
Cuspidaria var. beringensis			×				×	
Siliqua patula	×				×		×	×
Mactra falcata	×					×	×	
Macoma middendorffi	×						×	
Tapes staminea	×		×	×	×		×	×
Cardium grönlandicum	×			×	×	×	×	
Cardium blaudum	×				×		×	
Pisidium æquilaterale	×						×	
Modiolaria discors	×			×	×	×	×	
Modiolaria lævigata (var. ?)			×		×	×	×	
Modiola modiolus	×			×	×	×	×	×
Mytilus edulis	×			×	×	×	×	×
Pecten (?) alaskensis			×				×	
Placunanomia macroschisma		×		×	×		×	×
Total, 74 species	45	23	25	28	44	41	63	17

There is doubtless quite a number of species which would be revealed by dredging, which is a difficult task in such seas for persons whose busy time is precisely that season of the year when dredging can best be done. It is probable, however, that the additions thus made would, like the eighty per cent. of additions now chronicled, only confirm the remarks with which my report closed (l. c., p. 349).

"These figures show that the fauna of the Commander Islands, as far as known, is intimately related to the general Arctic fauna, and especially to the Aleutian fauna, somewhat less so to the Kamchatka fauna, but presents in itself nothing distinctive. While the faunal aspect of the mollusca is boreal, there is a number greater than might be

expected of species common to Japan and California, of which the two Pholads are the most noteworthy, as they have not yet been indicated from the Aleutian Islands, though it seems hardly possible if found living at the one locality that they can be absent from the other."

Noting that the connection with Japan is rather that the northern forms extend southward to Japan than that any characteristic Japanese forms extend north, the final paragraph still remains unshaken.

"The collection, though small, is valuable as closing a gap in our knowledge of the geographical distribution of the mollusca of the North Pacific, and the slight but still interesting confirmatory zoological evidence which it adds to the hydrographic determinations which have shown that the main current of the sea between Kamchatka and the Aleutian chain is a cold set of Arctic water southward, and that no perceptible warm northward tropical stream or branch of the Kuro Siwo can be traced zoologically or hydrographically in this direction."

It is probable that Mr. Grebnitzki sent those forms which he believed not to have been represented in Dr. Stejneger's collection rather than a complete series, and that he has actually a series nearly as full as that enumerated here from all sources.

NOTE.—Since the above was written I have examined the Gould collection now in the State cabinet at Albany, N. Y. This has experienced some vicissitudes, which may account for the fact that the shell now standing for the type of *Conulus pupulus* is not a *Conulus* at all, but the young of a conical flattened Japanese *Hyalina* (?) of a group entirely foreign to the Kamchatkan region. The *H. pauper* of Gould is the shell I have regarded as the adult *H. floccula* Mor., and which Dr. Westerlund perhaps correctly refers to a variety of *H. ruderata* Studer. I may add that to the preceding list should be added the *Acanthinula harpa* Say, collected at Bering Island by the Vega, on the authority of Dr. Westerlund, but not found by Grebnitzki or Stejneger.